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Wharton, Joseph

Project for reorganizing the small coinage, of the...

Philadelphia

[1864]

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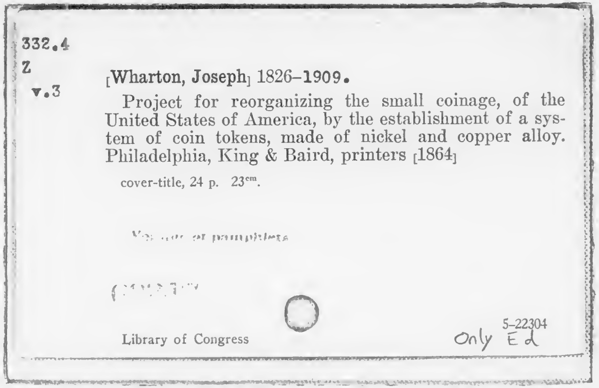

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PROJECT

FOR

REORGANIZING THE SMALL COINAGE,

OF THE

UNITED STATES OF AMERICA,

BY THE ESTABLISHMENT OF

A SYSTEM OF COIN TOKENS,

MADE OF

NICKEL AND COPPER ALLOY.

King & Baird, Printers, 607 Sansom Street, Philada.

1864

LIBRARY OF
THE REFORM CLUB
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52 William St., New York.

PROJECT FOR REORGANIZING THE SMALL COINAGE OF THE UNITED STATES OF AMERICA.

General Remarks upon Small Coinage.

MONEY, in its strict original meaning, is stamped metal, to be used as a circulating medium for payments, and possessing intrinsic value nearly or quite equal to its nominal value.

Current money or currency may, however, be tokens made of metal, paper, or other material, possessing little intrinsic value, but redeemable or exchangeable for money proper in such manner as to command general confidence, and thus to enable it to perform the functions of money proper.

In our present condition, government notes being by law made to take the place of real money, all other money tokens are now to be regarded as currency, and should now be convertible into government notes, as at ordinary times into specie.

The petty coinage of all nations is to greater or less extent a token system, and some of the most enlightened Governments bring it entirely within the laws of currency by engaging to give real or legal money for it at the pleasure of the holder, subject to certain conditions hereinafter alluded to.

These small coins must inevitably always be but tokens, because their material must be cheap enough to permit the coinage to continue even in the dearest times, and because a certain convenient bulk must not be exceeded. Waiving all other reasons, however, they should be but tokens, because their withdrawal from circulation causes extreme inconvenience, and their withdrawal, whether by hoarding or by export, can only be prevented by making their intrinsic value so low as to preclude temptation.

The making and issuing of petty coins must therefore be a constant source of profit, the magnitude of that profit depending upon the amount of difference between the cost and the nominal value of the coins, upon the quantity of the coins demanded by the public, upon the completeness of the monopoly of supplying that demand, and to a certain extent upon the durability of the coins.

Obviously, Government alone should have the right to issue these coins. In order to deserve the profits thence accruing, it should ensure perfect currency to the coins not only or mainly by making them legal tender to certain limits, but also by engaging to redeem them by giving in exchange lawful money of larger denominations—it should also guard from imposition the illiterate and laboring classes (who chiefly use these coins) by giving to them marked and easily recognized characteristics.

In order to enjoy its due profits, Government should protect itself from the danger of redeeming counterfeits, and should guard its monopoly, not only or principally by penalties for uttering or circulating counterfeits, or any sort of money token, but also, and much more, by making its own coins or tokens of such material, and of so excellent workmanship, as to

make counterfeiting nearly impossible. To ensure a full circulation, the coins should moreover be such as to command popularity: that is, they should be pleasing, convenient, and suitable in the estimation of the public.

Supposing a Government to have adopted a system of small money tokens complying with the above conditions: that is, convenient, convertible, and hard to counterfeit, it must yet proportion the entire issue to the wants of the population, so that neither a famine nor a glut of small change shall be experienced. The amount of the first issue must be to some extent matter of experiment, though guided by the experience of other Governments, as well as its own. It may be laid down as a rule, however, that a sufficient stock of the several small coins should constantly be kept on hand by the Government to satisfy promptly all legitimate demand, just as a bank keeps always on hand a surplus of its own notes to satisfy any sudden requirements of its customers at a profit to itself. Supposing an equilibrium to be once established by a sufficient issue of the coins, the quantity outstanding will always be regulated to the wants of the community in every part of the country, by giving to the public the options (subject only to such conditions as will prevent hasty fluctuations) of obtaining them in exchange for other money, and of receiving other money for them.

The conditions of issue, circulation and redemption might properly be about as follows, viz.: 1st, that the small coins should be legal tender up to about ten times the value of a single coin of the denomination offered; 2d, that Government should always, when able, at its suitable designated offices, issue the coins in any required sums in exchange for legal money of larger denominations; 3d, that Government at the same offices should always receive the coins in sums not less than five hundred times the denomination of a single coin of the kind offered, giving legal money of large denominations in exchange.

Should our Government now adopt a judicious system of small coinage convertible into legal money, that system would require no change whatever upon the resumption of specie payments, of which, indeed, the substitution of coins for the smallest of our postage notes would be a welcome precursor.

Materials for Small Coins.

A perfect material for small coins should be cheap, handsome, not readily oxidable, capable of being readily worked by adequate means, durable in wear, and hard to counterfeit.

The materials which have been actually adopted hitherto are as follows, naming them in the order of their intrinsic value, viz.: 1, pure copper; 2, bronze (*i. e.* copper, tin and zinc); 3, German silver (*i. e.* copper, nickel and zinc); 4, copper and nickel alloys of several proportions; 5, a sort of German silver containing in addition to the other ingredients, a little silver; 6, copper and silver alloy, or low standard silver; 7, silver of ordinary coin standard.

The materials which may at some future time be suitable, but which have never yet been tried, may now be limited to 1, aluminium and its alloys; 2, cobalt and its alloys. The first of these metals is white, handsome, sonorous, not readily oxidable, and of remarkable lightness, besides being strong and ductile. Salt and saline solutions, however, corrode it rapidly, even the sweat of the hands having a perceptible effect upon it. The only one of its alloys whose qualities I know to have been carefully tested, is the so-called aluminium bronze, a compound of 10 aluminium 90 copper. This material is strong, handsome, not readily oxidable, and has the weight of wrought iron; it has been employed to a limited extent in the construction of philosophical instruments, but I believe that no such experience of its qualities has yet been acquired as would justify its adoption for coin material. Supposing those qualities, however, to be all that could be desired, its cost must greatly exceed that of the richer of the nickel alloys spoken of further on, and its supply seems to me rather too precarious.

Aluminium is now, I believe, made only in France and England, but to best advantage at Newcastle, England; a Greenland mineral called Cryolite being employed in its manufacture. Should this metal now be introduced into our coinage, we have to choose between getting from England the manufactured product of this Greenland mineral, or waiting for a new industry to be established in this country, which latter process I know by experience to be laborious and tedious. In view of the varied risks of war, commerce and manufacturing, it would seem imprudent to make ourselves dependent upon either of those alternatives.

Cobalt is less known than aluminium, but it appears to possess great advantages and no known disadvantages; some of its alloys, particularly with silver, have remarkable beauty. Cobalt cannot now, however, be had in sufficient quantity or cheap enough to allow of its use for low coinage.

Of the materials actually used for low coins, No. 1, or Pure Copper, has been the most generally used for the small coins of almost all countries until recently. It is cheap and easy to work, but is too easily oxidable and acquires a disagreeable odor when handled. Tokens made of it, if small, compared with the nominal value, offer great inducements to counterfeiting, which is extremely easy—probably no nation has any idea to what extent this has been carried, even though the coins have usually not been very small; if the coins possess intrinsic value nearly equal to the nominal, they are too bulky to be used for most of the denominations required. No. 7, Standard Silver, is too valuable to be used as material for mere tokens, and is rather too soft to endure the wear to which small coins are exposed. It is to be borne in mind that the loss of precious metals by the wear, and the straying, and to some extent by the hoarding of coins, is an absolute loss of so much to the world. As the wear and chance of loss is greatest in the small coins, those coins should be made of a harder and less valuable material than standard silver.* No. 6. The objec-

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* It is estimated that Bank of England notes, none of which are below £5, to the total value of over £1,330,000, were lost and destroyed in the 40 years from 1792 to 1832, that amount being, of course, clear profit to the bank; as money of small denominations is treated with less care than large notes, some idea may be formed from this of the advantage from this source, of a token-system of small coinage.

When the French 15 cent and 30 cent pieces, coined in 1791 and 1792, were demonetized 50 years afterward, only 16,000,000 were returned out of 25,000,000 issued.

tions to standard silver apply, though with less force, to silver of low standard. Besides, if intrinsic value is to be given, it can be best done in standard silver for most of the small coins, while, if a token system is to be adopted, tokens can be made at once cheaper and better than of low silver. No. 3, German silver, is in some respects a pretty good material, and is used for coins in some parts of Germany. It is easily worked, sightly enough, at least when new, and cheap enough; it is, however, rather too soft to wear well or to offer sufficient difficulty to counterfeiters, it acquires by use a brassy look, unless richer in nickel than the specimens which I have seen, and is liable to the objection common to all alloys containing zinc, that the great volatility of that metal at the melting point of copper, causes a variable quantity of it to fly off as vapor, leaving the alloy of uncertain and varying composition. The sense of Europe is moreover becoming settled in favor of simple binary compositions for coin metal. No. 5, German silver, containing silver, is used I believe only in Switzerland, where a little silver was thought necessary to satisfy popular prejudice; this alloy has no advantages over German silver.

As valid reasons appear to exist against the use of all these materials, the list is reduced to bronze and copper-nickel alloy, which are indeed, in my opinion, the only ones to be seriously considered.

Bronze is a word of somewhat indefinite meaning, as it embraces alloys of various composition from the copper, tin and lead alloy coined by the Romans 500 years B. C., and the copper, tin and zinc of Roman coins several centuries later, to the simple binary compound of copper and tin of the present day which I consider to be most properly entitled to the name.* Of course, the properties of the various bronzes are as varied as their composition, but supposing zinc to be excluded on account of its volatility and its tendency to impart a brassy appearance, we have to consider a simple copper-tin alloy, or bronze proper.

A mixture of copper and zinc only, does not merit the name of bronze; it is brass, and has not recently been proposed for coinage that I am aware of.

The alloys of copper and tin vary from 67 copper, 33 tin, which is white, hard, and brittle, (speculum metal,) to the alloy of 95 copper, 5 tin, which according to newspaper report is proposed by a bill lately passed in the U. S. Senate, to be used for our low coins. These alloys vary in color from the perfect white of speculum metal, through pale yellow, brass yellow, and yellowish red, down to copper color. They are all more fusible than copper and harder; 90 copper, 10 tin, is probably the toughest, and best adapted on that account, for coining, but the color is too pale and brassy.

The objections which have been stated against copper apply to a great extent against bronze. Coins made of it acquire, by use, a disagreeable odor and a valueless appearance, and when exposed to oxidizing influences become covered with a sort of verdigris, well known to numismatists by the name of *patina*.

Another objection to the use of any tin alloy in this country as a material for coin is, that no tin is made

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* The bronze used in France as material for coins is 95 copper, 4 tin, 1 zinc.

here, nor are any workable veins of tin ore known to exist in the United States; to adopt a bronze coinage therefore, would be to make ourselves absolutely dependent upon foreign countries for one of the materials of our coins.

The strongest objection to bronze is, however, that it is so cheap, and easily made, and easily worked a composition, that it offers no difficulties to counterfeiters, and it cannot be doubted that if our Government should establish a bronze coinage cheap enough to promise large profits, vast numbers of counterfeit coins would be issued, identical in appearance and in composition with the genuine ones, by which both the public and the Government would be defrauded to a very great extent, and almost without the chance of remedy. And not by this means only would Government fail to reap the prospective profits of such a coinage, for it must be borne in mind that the extent of the circulation (one of the chief elements in any calculation of profit) depends in great measure upon the pleasingness and popularity of the coins themselves, in which respect bronze might perhaps fail.*

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* As the example of France has been adduced in favor of bronze coin, it seems proper to review the history of bronze coinage in France.

Bronze coins were introduced into France, not as an improvement upon copper, but as a makeshift, in the time of the first Republic.

France not being a copper-producing country, and being at that time isolated commercially from the rest of the world, was unable to procure copper to continue its low coinage, and was forced to resort to melting down the bells of the churches, &c., for that purpose. When, in the time of the Consulate, France was again able to obtain pure copper, this involuntary coining of bronze was abandoned, and the low coinage was made of copper alone, and so continued until the reign of the present Emperor, who found France flooded with a variety of copper coins, so diverse in size and appearance, and many of them so

There now remains No. 4, Copper and Nickel alloys. These alloys have been experimented with from 10 nickel, 90 copper, to 50 nickel, 50 copper, but as our own government found 12 nickel, 88 copper, to be the poorest nickel alloy which seemed suitable for coins, and the Belgian Government after determining 30 nickel, 70 copper, to be the richest nickel alloy which could be worked without too great difficulty of melting and stamping, finally adopted 25 nickel, 75 copper as the most available, we may limit our review to those two extremes.

Nickel itself is a rather rare metal, and its ores besides being scarce, are usually poor, (3 per cent. nickel being quite enough to make an excellent ore,) and are always very hard to reduce. Its color somewhat resembles that of steel, but is whiter; it is very hard to melt, and very hard to work, though it is malleable and capable of welding like iron.

The nickel and copper alloys (from 25 to 12 per cent. nickel,) are hard to melt, and hard to work and stamp, yet they can, by proper means and skill, be perfectly worked into coins. They vary in whiteness, in hardness, and in infusibility with the proportion of nickel, those richest in nickel excelling in all these particulars. They take sharp impressions from dies and have great power of resisting both wear and oxidation. As the alloy of 12 to 88 is familiar to all of us, I will only say that the alloy of 25 to 75 is superior to it in all the requisites for coinage, (including that necessary one for token coins above the very lowest denomination,) of difficulty of melting and working. It yields only to the best appliances, but it yields to them perfectly, making a very handsome coin, of a peculiar white color, different from silver, and possessing a clear and characteristic sonority or "ring."*

In a word, I conceive these alloys to possess to a very great and superior degree all the properties desirable in a metal for low coinage, being cheap enough, sightly, convenient, durable, and very hard to counterfeit.

They can be worked into coins with perfect success by such means as are at the command of our Government, while the skill, the apparatus, and even the material are rather beyond the reach of counterfeiters.

The subject of the best material for small coins is treated with ability in a pamphlet printed in Belgium, in 1860, which gives a full account of all the proceedings which led to the adoption in that country of an alloy of 25 nickel, 75 copper, for coins below 1 franc.†

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shabby, that a change which would replace them all by a new and uniform system of low coinage seemed necessary, while yet the withdrawal of so great a mass of stuff of little value, could not be done without very great sacrifice, unless the very cheapest presentable substitute should be issued in its stead.

This necessity, which does not exist in our case, was the reason that caused France to adopt her present bronze coins.

Some persons suppose, however, that the same restless desire to multiply his own effigy and the evidences of his sovereignty which induced Louis Napoleon to re-coin all the French gold and silver even of Louis Phillippe's reign, may have had something to do with the remodelling of the copper coinage.

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* The ring of a coin depends greatly upon the proportion of its diameter to its thickness, just as a bell, to ring well, must be properly shaped.

Our present cent coins are faulty in this respect by being too thick.

† A copy of this pamphlet is submitted to Government herewith.

It is a matter of pride for the United States that our Government was the first to appreciate the advantages of nickel and copper alloy for small coins. At present, Belgium, Italy, and Peru, also use small coins made of nickel and copper only. Chili is about to follow suit, and a system of nickel alloy small coins has lately been proposed in England.

Proper Quantity and Denominations of Small Coins.

It is obvious that experience alone can determine with any exactitude the quantity of small money which any nation should possess; it is also clear that in the case of a redeemable system of small money, the public (who, by having the right of conversion, are able to limit the total issue,) will take care that no excess shall exist, while the Government, which makes a large profit upon the coinage, will take care that there shall be no deficiency. In estimating the quantity to be first issued, however, we must be guided by the experience of our own circulation heretofore, by that of other nations, and perhaps to some extent by abstract or empirical considerations, and evidently the total amount must depend primarily upon the number of denominations issued, and the magnitude of the largest of these.

To consider, then, this last point firstly, it appears to me that the quarter-dollar is the smallest piece of coin which should pretend to intrinsic value. The English shilling, the French, Italian and Belgian franc, the Spanish two-real piece, and the quarter-dollar of our own, and of nearly all the other American Governments, affords a tolerably general and tolerably uniform point of departure for the silver coinage; below this, there is very little uniformity, if even approximation, of coinage, nor is there in one or more of the countries just named, any silver or intrinsically valuable coinage below that denomination.* I should, therefore, propose that all our coins below 25 cents be made of nickel and copper alloy, viz.: pieces of 10 cents, 5 cents, 3 cents, 2 cents, and 1 cent.

Our Mints have issued, up to December 31, 1863, of

10 cent pieces, . . .	80,719 365—total nominal value	$8,071.936.50
5 do.	88,824,908	4.441,245.40
3 do.	42,659,910	1,279,797.30
1 (and ½) cent pieces,	324,192,355	3,241,923.55
Total nominal value of U. S. coins below 25 cents,		$17,034,902.75

Of this coinage, the silver has in great part gone abroad, or has been melted by the silversmiths, who have lately been able to buy it at a cheaper rate than the larger silver coins. Some has been lost, some little recoined by the Mint, and some is hoarded, but no very great part of it will ever re-enter circulation.

The copper cents and half-cents (amounting to $1,601,713.65) have disappeared, many having been returned to the Mint in exchange for nickel cents, and many lost or destroyed.

Probably less than $3,000,000 of low coinage of all sorts now exist in the United States, one half of which is the nickel cent.

In view of this exhibit, and of the vast extent and rapidly increasing population of this country, I should estimate that a low coinage, amounting to $20,000,000 and to be issued during the next five years, in about the following proportions, would not be excessive, viz.:

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* The English Government has now under consideration a system of coins to be decimal fractions of the Pound sterling. In connection therewith, they are examining the feasibility of making coins of nickel alloy up to 25-1000 of the Pound, which about equals 9-100 of our gold dollar.

10	cent pieces—(To weigh	120	grains each,)		$10,000,000
5	do.	do.	60	do.	5,000,000
3	do.	do.	30	do.	2,500,000
2	do.	do.	100	do.	1,500,000
1	do.	do.	50	do.	1,000,000

The 10 cent, 5 cent, and 3 cent pieces I should propose to make of an alloy of 25 parts nickel and 75 parts copper; the 2 cent and 1 cent pieces, of an alloy of 12 parts nickel and 88 parts copper, as our present cents (which weigh 72 grains) are composed.

In Europe, two francs, or its equivalent, is reckoned to be about the maximum of copper coin proper to be issued for each individual composing the nation, supposing no coin to be above two cents nominal value.

Belgium, whose population was, in 1856, 4,530,000, had the following amount of copper coinage in 1860, viz.:

1	centime	(about 1-5 cent,)	444,419.68	francs.
2	do.	2-5	2,394,474.30	do.
5	do.	1	2,369,738.90	do.
10	do.	2	308,913.30	do.
	Total,		5,517,546.18	do.

When the nickel alloy coinage was proposed for that country, in 1860, the following quantities were proposed to be issued, viz.:

Pieces of	5	centimes	(1 cent)	2,000,000	francs.
do.	10	do.	(2 do.)	2,600,000	do.
do.	20	do.	(4 do.)	4,600,000	do.
Total,				9,200,000	do.

This would be at the rate of about two francs for each individual, but I am informed that the new system works so well that about double the estimated quantity has been issued.

Switzerland, whose population was, in 1860, 2,534,000, had issued German-silver coins up to that time, as follows, viz.:

Pieces of	5	centimes,	1,001,100	francs.
do.	10	do.	1,331,600	do.
do.	20	do.	2,312,000	do.
Total,			4.644,700	do.

This approaches the ratio of two francs for each individual, and has been found, in practice, insufficient for the wants of that country.

France, whose population, including Algeria, now approaches 40,000,000, decided to limit the emission of bronze coins to 40,000,000 francs; these pieces, however, did not reach a higher denomination than 10 centimes, and that quantity is said to have proved insufficient.

The new Kingdom of Italy, whose population is stated to be 22,000,000, makes its coins (according to the best information within my reach) of nickel alloy, up to the denomination of 50 centimes, or 10 cents of our money, and expects to issue $20,000,000 of them. I have very little doubt of the correctness of this statement, but have sent to Europe for further details, and for specimens of the coins.

From all the data accessible to me, I am led to the conclusion that the sum of $20,000,000 distributed among the various denominations up to ten cents as above proposed, would be a suitable quantity of coins to be issued by our Government, and that it would very probably prove to be insufficient. Since, however, the issue would necessarily extend over a considerable period, which I estimate at five years, the coinage could of course be checked at any time if the demand should cease, and on the other hand, it could be continued at the full rate for as much longer than five years as might be needed to satisfy the public. After the satisfying of the first demand, it would obviously be necessary to continue the coinage, (though at a reduced rate), both to replace the pieces lost and destroyed, and to supply the continual increase of population.

The experience of our Government in the issue of five and ten cent postage notes will afford some light upon the question of how many coins of those denominations may be made, yet the parallel will not be complete, for the reason that many counterfeits of those notes exist, and that no paper tokens of so small denominations can command the extent of circulation which would be reached by suitable coins.

Cost of Making Nickel Alloy Coins.

The experience of our Mint can probably afford to the Government tolerably accurate ideas as to the cost of making the proposed $20,000,000, of nickel alloy coins. That experience cannot, however, be accepted as an absolute guide, because on the one hand, wages, fuel, &c., cost more now than in ordinary times, and on the other hand, the coining of so large a quantity of pieces of the same sorts would permit considerable economies to be made. These elements of uncertainty

apply to the expense of manufacture only, and perhaps nearly balance each other; the cost of the component metals is an element of a different nature, yet also uncertain.

I proceed to submit an estimate of the entire cost of making these $20,000,000 of coins, taking for the prices of the metals the figures at which Government could now buy them, and allowing for coinage, rates considerably above those which I find estimated to be adequate at the Belgian Mint in 1860.*

The nickel is supposed to be quite pure; that is, to be paid for only at the rate of $2.50 for one pound of 100 per cent.

An allowance in weight of about 2 per cent. is made for waste in coining, by which term I mean to include all operations from melting the metals to finishing the coins,

For 10 cent and 5 cent pieces—		
52 lbs. nickel, at $2 50 - - - - -	$130 00	
156 " copper, at 42 - - - - - -	65 52	
		195 52
Coining 8000 pieces of 10 cents, 120 grs. each " 8000 " 5 " 60 " - - -		44 48
Total nominal value, $1,200; total cost, - - - - or 20 per cent.: profit consequently 80 per cent.		$240 00
For the 3 cent pieces—		
52 lbs. nickel, at $2 50 - - - - - -	130 00	
156 " copper, at 42 - - - - - -	65 52	
		195 52
Coining 48.000 pieces of 3 cents, 30 grains each, - -		92 48
Total nominal value, $1,440; total cost, - - - - or 20 per cent.: profit consequently 80 per cent.		$288 00

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* The Belgian estimate for total cost of manufacturing pieces of 20, 10, and 5 centimes, weighing about 93, 62, and 31 grains respectively, was 2 francs per kilogramme, or about 40 cents for 15,434 grains.

For the 2 cent and 1 cent pieces—		
25 lbs. nickel, at $2 50 - - - - -	62 50	
179 " copper, at 42 - - - - - -	75 18	
		$137 68
Coining 8.400 pieces of 2 cents, 100 grains each, " 11.200 " 1 " 50 "	- -	48 98
Total nominal value, $280; total cost. - - - - - - or 66⅔ per cent.: profit consequently 33⅓ per cent.		$186 66
The total nominal value of the proposed issue is		
of 10 cent, 5 cent, and 3 cent pieces, - - - -		$17,500.000
of 2 " " 1 " " - - - -		2,500.000
The profit of making which has been shown to be		
on the $17,500.000. 80 per cent. - - - - -		14,000.000
" " 2,500,000, 33⅓ " " - - - - -		833,333
Total profit to Government . - - - - - -		$14.833,333

If it should be objected that this show of profit is delusive, and my estimates unreliable, I can only reply that I believe Government could shortly make arrangements to have these coins made outside of the Mint for the figures named, adding, however, a reasonable margin for profit on the coining, which is here roughly estimated at mere cost. It would not, however, in my opinion, be judicious to remove the coining from the Philadelphia Mint, nor to entrust it to any private contractor, unless for some cogent reasons which I cannot think likely to exist.

It is true that the prices of nickel and copper may possibly go still higher than my estimates, but in the case of copper at least this is improbable, while as lower prices are sure to return with the termination of the war, the average will doubtless be below my estimate.

Nickel being a rare metal, and the consumption of it throughout the world being now beyond the production, is perhaps more likely to rise than copper, and

less likely to fall, but it also will doubtless fall in price as our currency approaches a specie basis, though, perhaps, not in the same measure. Upon this point I would remark that though the present market price for nickel in this country is fully $3 00 per pound for commercial nickel averaging about 95 per cent., I am now willing to engage to deliver the entire quantity which would be required for the proposed coinage at the estimate price of $2 50 per pound for 100 per cent., or to deliver one-half or one-fourth the quantity at that price, leaving Government to take the chances of the market for the remainder.

In the recent case of the Italian Government, I am informed that they required 500 tons of nickel for the manufacture of their new issue of small coins, and that they thought it most prudent to purchase the entire quantity in advance; at what prices I do not know.

The estimates made by the Belgian Government in 1860 of the cost of their new coins, set the price of nickel at 15 francs per kilogramme, (about $1 36 gold per pound.)

Quantity of Nickel required, and whence derivable.

The entire quantity of nickel needed for the coinage as proposed in the foregoing estimates would be as follows, viz.:

For the 10 cent, and 5 cent coins,	15,000,000÷1,200×52,	650.000 lbs.
" 3 " "	2,500.000÷1,440×52,	90,278 "
" 2 " and 1 cent "	2,500.000÷ 280×25,	223,214 "
Total, - - - - - - .		963,492 lbs.

As this quantity is about equal to the entire annual production of nickel throughout the world, which production, owing to scarcity of suitable ores and the difficulties of the manufacture, is not undergoing any considerable increase, one is naturally led to inquire whether it is possible to obtain so large an amount without so disturbing the market as to cause an extravagant advance in the price. That question is answered by my offer to deliver the entire quantity at a fixed price, but it may be more satisfactory to examine into my ability to fulfil such an engagement.

A year ago no nickel was made in America, and it would have been impossible to procure in this country, or perhaps in the world, enough of it to carry out this plan of coinage; the Mint has found, indeed, constantly increasing difficulty to procure a supply for the present cent coins. More than a year ago, however, having then completed the task of establishing the manufacture of metallic zinc in the United States, my thoughts were turned toward the manufacture of nickel, which after due consideration I undertook and have put into successful operation.* I have now exclusively in my own hands, and solidly established, Nickel mining, smelting, and refining operations upon a large scale, and quite free from debt, speculation, or entanglement.

Are these operations, however, capable of producing

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* It may be proper here to say that the nickel manufacture was first started in America about ten years ago under the auspices of Prof. J. C. Booth; it passed afterwards into other hands, broke down, and was abandoned. The Director of the Mint, knowing these facts, and experiencing and foreseeing as he did the inconvenience of relying upon foreign countries for one of the materials of our coins, encouraged my project for re-establishing here the manufacture of nickel.

the quantity of nickel which would be needed for the proposed coinage, supposing it to consume 1,000,000 pounds in five years, or at the rate of 200,000 pounds per annum?

To make one pound of nickel, at least fifty pounds of ore are required, as the ore really contains by average but little over two per cent. of nickel, and yields in practise less than two per cent.

To produce 1,000,000 pounds of nickel would thus require the consumption of more than fifty times that quantity of ore; say 25,000 gross tons, or 5,000 tons per annum for five years.

My mining operations are so fully developed, the quantity of ore exposed thereby is so great, and the arrangements for raising it are so complete, that there can be no reasonable doubt of my having more than the requisite quantity of ore for the next five (and probably for the next fifty) years.

My smelting works are now constantly treating ore enough to yield about 150,000 pounds of nickel per annum; their capacity is now being doubled, and they will be in operation at the double rate within two months from this time.

My finishing or refining works are not in so competent a condition, owing to the great intricacy and tediousness of that operation, and the large apparatus and space required to carry it on. My works occupy nearly two acres, are now constantly making nickel at the rate of 60,000 pounds per annum, and are being doubled.

They will (barring accidents) begin to yield at the double rate or 120,000 pounds per annum within three months, and could be further enlarged to the full capacity of over 200,000 pounds per annum within six months. I do not intend, however, to undertake that further enlargement, except upon some such absolute assurance as the demand of the Government for a considerable period, because the ordinary business of the country would not at present justify it.

The mine and smelting works are situated in Lancaster County, Pennsylvania; the refining works in Camden, New Jersey.

I will add, that although very willing to supply the nickel for the coinage herein proposed, I am not greedy for Government patronage, which is a thing I have never sought after. I am now selling my nickel at much higher prices than the one fixed in the estimates given herewith, and as the Mint will naturally receive its nickel, when imported from other countries, free of duty, while private consumers must pay such duty as the tariff may impose, those private consumers can always be depended upon to pay a higher price than the Mint.

Conclusion.

I have endeavored, in the foregoing pages, to show:

1. That our small coins, or change, should not pretend to intrinsic value, but should be a system of tokens.

2. That these tokens should be redeemable or convertible into larger money, as our postage notes now are.

3. That the alloys of nickel and copper are the proper materials for these coin-tokens on account of

their beauty, durability, cheapness, and the very great difficulty of counterfeiting them.

4. That several nations have adopted nickel-alloy token-coinage with perfect success, and that others are now preparing to do so.

5. That our token-coinage should go to the denomination of 10 cent pieces, but not higher, as the system should be suitable for continuance after a return to specie payments.

6. That the total amount to be first issued might properly be $20,000,000, distributed through five years.

7. That such an issue would yield to Government a profit of $15,000,000, reckoning at present prices, and not taking into view the almost certain extension of the issue, or the replacing of coins lost and destroyed.

8. That the nickel needed for the purpose can be had in our own country, and at a moderate price.

I do not pretend to have exhausted the subject in this little treatise. Neither do I pretend to assert that the weights which I have suggested for the several coins are absolutely the best; their weights and devices and all other details can be examined into and determined at leisure, in case the general features of the project meet with approval. Perhaps, also, it might be found unnecessary to have both 3 cent and 2 cent coins, and perhaps less than 12 per cent. of nickel might suffice for the cheaper alloy.

The suddenness of the proposition to abolish nickel alloy coinage having obliged me to prepare these remarks rather hastily, I have not yet been able to procure from Europe the full information and assortment of coins which I desired, yet I have learned enough to satisfy me that while our attention has been occupied by the rebellion, much advance has been made in Europe on the subject of nickel alloy coinage, which our Government has not been fully, if at all, informed of. England and France so intervene, that they seem almost to eclipse the rest of Europe from us, yet they by no means monopolise the intelligence and sagacity of Europe, nor is their example always to be followed.

I submit to Government herewith, a Belgian pamphlet published in 1860, showing the careful study and the course of reasoning which led Belgium, in that year, to ordain a token system of nickel alloy for small coinage; specimens of nickel alloy coins of several countries are also submitted, some of which are made from nickel of my manufacture. I hope to be able to submit other specimens a few weeks hence, (including some bronze coins as they appear after use,) together with information concerning the Italian nickel alloy coinage, and perhaps an official statement of the experience of the Belgian Government upon this subject.

JOSEPH WHARTON.

Philadelphia, April 15, 1864.

END OF
TITLE